



## **Bacterial plasmid having genes encoding enzymes for the degradation of aromatic compounds**

**Description of Technology:** A bacterial plasmid has been isolated from *Pseudomonas* CT14 comprising genes encoding enzymes implicated in aromatic ring cleavage. Additionally, the novel genes encoding proteins involved in mercury tolerance and plasmid stability and replication have been identified. The strain from which the plasmid was isolated is useful in a variety of methods including methods for the degradation of aromatic compounds, particularly catechols.

### **Patent Listing:**

1. **US Patent No. 6,548,292**, Issued on April 15, 2003, "Bacterial plasmid having genes encoding enzymes for the degradation of aromatic compounds"

<http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HITOFF&p=1&u=%2Fnetacgi%2FPTO%2Fsearch-bool.html&r=1&f=G&l=50&co1=AND&d=PTXT&s1=6,548,292.PN.&OS=PN/6,548,292&RS=PN/6,548,292>

**Market Potential:** It is well known that bacterial genes are sometimes located on plasmids. Plasmids are not necessary for routine "housekeeping" functions in bacteria (e.g., DNA synthesis and protein synthesis). However, the genes on plasmids are often important in specialized environments. Antibiotic resistance genes and heavy metal resistance genes are examples of genes commonly found on plasmids. Although plasmids are similar in function to chromosomes as carriers of genes, plasmids can be distinguished from chromosomes. Plasmids are smaller than chromosomes and encode functions that are dedicated to plasmid replication.

Understanding the make-up of bacterial plasmids derived from species known to participate in degradative reactions is key to the design of more effective degrading species. Because of their ease of transmission, bacterial plasmids are useful tools for moving degradative genes into hosts. Additionally, because they are so promiscuous, many plasmids carry genes that have been adapted for expression in hosts other than the species from which the plasmid has been isolated.

In spite of the utility of bacterial plasmids, few have been fully characterized. There remains a need therefor for bacterial plasmids comprising genes encoding degradative enzymes whose replication and stability functions are understood and may be manipulated for the broad spectrum expression of degradative genes. Applicants have met this need by the discovery and isolation of a plasmid, CT14 from a *Pseudomonas* sp. carrying genes necessary for replication and stability in a host as well as genes encoding enzymes for the degradation of various aromatic substrates including catechols and other intermediates in the toluene degradative pathway.

### **Benefits:**

- A bacterial plasmid isolated from CT14

### **Applications:**

- Degradation of aromatic compounds

### **Contact:**

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